Jamie Welch Park Car-Top Access Erosion Control and Demonstration Project
Abbreviated Quality Assurance Project Plan for Non-Monitoring Projects Involving Pollutant Load Reduction Modeling or Engineering Calculations

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Prepared by

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A3 & A4 – Distribution List and Project Organization

Table 1 presents a list of people who will receive the approved QAPP, the QAPP revisions, and any amendments as well as their role and project responsibilities.

Table 1. QAPP Distribution List

QAPP Recipient Name	Project Role	Organization	Responsibilities	Telephone number and Email address
Michele Tremblay	Project Manager	Boscawen Conservation Commission	Grant administration, semi-annual reporting, and overall QA/QC	603-796-2615 mlt@naturesource.net
Dean Hollins	Project QA/QC Manager	Town of Boscawen Public Works Department	Field supervision, QA review of field data, & maintain QAPP	603-753-9188
Wendy Waskin	NHDES Project Manager	NHDES Watershed Management Bureau	NHDES Grant Agreement Administrator	603-271-8861 wwaskin@des.state.nh.us
Jillian McCarthy	NHDES Program QA Coordinator	NHDES Watershed Management Bureau	Reviews QAPP preparation and other QA/QC activities	603-271-8475 jmccarthy@des.state.nh.us
Eric Williams	NHDES Program Manager	NHDES Watershed Management Bureau	NHDES data use/decision maker	603-271-2358 ewilliams@des.state.nh.us
Vincent Perelli	NHDES Quality Assurance Manager	NHDES Planning & Innovations Unit	Responsible for NHDES review and approval of QAPP	603-271-8989 vperelli@des.state.nh.us
Warren Howard	USEPA Project Manager	USEPA New England	Data user, responsible for review and approval of QAPP	617-918-1587 Howard.Warren@epamail.epa.gov

A5 – Problem Definition/Background

The proposed project is located in Boscawen, NH at the Jamie Welch Park canoe launch, a public car-top canoe launch that provides access to the Merrimack River. The current launch area has a steep grade surfaced with compacted fine silt. It is adjacent to a dirt parking area, which provides parking for town ball fields and launch users.

The compacted surface circumvents most of the sediment and soil runoff during moderate rain events, however; strong storms cause washouts and intense erosion. In addition, foot traffic has caused widening of the launch and destruction of the natural and stabilizing vegetation. These events have resulted in a large sediment bar or "plume" extending from the end of the launch at the River's edge and out into the water for several feet. This has disrupted the normal dynamics of the river by creating a bar that catches sediment and does not change and clear itself with the normal high spring flows. Trash and other contaminants from the ball field and park run down this slope during rain and snow melt events.

The objective of this project is to address sediment and associated nutrient inputs, the primary and secondary pollutants of concern, by resurfacing and defining the launch trail with porous pavers. The intention is to discourage widening of the path and limit unnecessary erosion and destruction of vegetation due to foot traffic, as well as prevent the trail from washouts during intense storm events. The EPA -approved Region 5 Load Reduction Model will be used to estimate the loading reductions of the primary pollutant of concern, sediment, as well as associated secondary pollutants, nitrogen and phosphorus.

A6 – Project/Milestone Description

The proposed project is located in Boscawen, NH at the Jamie Welch Park canoe launch, a public car-top canoe launch that provides access to the Merrimack River. Jamie Welch Park and the canoe launch are situated on the west bank of the Merrimack River immediately downstream of the abandoned rail bridge between Boscawen and Canterbury. The dirt parking area occupies 5,760 square feet and the path from the parking area to the river measures 150 feet by 4 feet or 600 square feet. The total area affected by this project is 6,360 square feet. Specific project tasks are described in the Final 2006 Watershed Assistance Grants Proposal and Grant Agreement on file with DES.

Table 2. Project Schedule Timeline

Activity	Dates (MM/DD/YYYY)		Product	Due Date
	Anticipated Date(s) of Initiation	Anticipated Date(s) of Completion		
QAPP Preparation	09/12/2006	11/30/2006	QAPP Document	12/31/2006
Pre-implementation modeling/calculations/photo documentation	01/10/2007	01/31/2007	Pre-implementation pollutant loading calculations Photo documentation	02/28/2007
Construction of porous paver pathway and grading of parking area	10/01/2007	10/31/2007	Porous paver pathway and delineated parking area	12/31/2008
Interim Progress Report	06/30/2006	10/31/2008	Quarterly progress reports	10/31/2008
Post-implementation modeling/calculations/photo documentation	11/01/2007	11/30/2007	Post-implementation pollutant loading calculations Photo documentation	12/31/2008
Data Review and Assessment	02/01/2007 12/01/2007	02/10/2007 12/10/2007	Data entry into Grants Mgt Dbase and BMP efficiency report for project	12/31/2008
Final project report preparation	10/01/2008	11/01/2008	Final Report	12/31/2008

A7 – Quality Objectives and Criteria

The data collected for this project is for the sole purpose of estimating pre- and post-implementation pollutant loads using the Region 5 Load Estimation Model for Gully Stabilization ("the Model"). The type and quantity of data required are specified in the Model's User Manual (on file with DES) and the necessary Model input data is documented on the *Field Data Entry Sheet – Gully Stabilization.*

Although this project involves the stabilization of a car-top launch, the primary contribution of pollutants to the surface water is via the launch trail. The trail is essentially a gully with compacted soil

and a trapezoidal shape. Through project scoping meetings and review of the Model's User Manual it was determined that gully stabilization is the most appropriate Model Subcategory to use for this project.

The following site-specific information is required to run the Model: top width (ft), bottom width (ft), depth (ft), and number of years for gully formation. Each field measurement is collected using a tape measure and is recorded to the nearest foot. The number of years of gully formation is to be estimated based on the Town of Boscawen historical records.

The following optional site-specific information will be collected to run the Model: BMP efficiency, soil weight, soil P and N concentrations. This information will be obtained from the BMP manufacturer and the NH Geological Survey, respectively. This secondary information is documented in section B5 Non-Direct Measurements.

Any additional information required to run the Model will be obtained from the default values provided in the Model User's Manual.

Pre- and post-implementation photographs will be taken in accordance with the DES *Photo Documentation Procedure for Measuring the Success of Restoration Projects and Best Management Practices*, on file with DES.

A8 – Special Training/Certification

Field Data Collection

The field data collected for Model input will be collected by trained field staff of the NH Department of Environmental Services (DES). All staff members are trained in field techniques including site measurement and documentation of site conditions. The *R5 Load Estimation Model Field Data Entry Sheet – Gully Stabilization*, provided with the Model, will be used to guide data collection. No additional training is required. Qualifications are on file with DES.

Modeling

The model will be run by DES staff. These staff members have attended training on the Region 5 Load Estimation Model hosted by EPA and Tetra Tech in Boston, MA in April 2003.

BMP Installation

The Boscawen Department of Public Works (DPW) will work with the Conservation Commission and the porous paver manufacturer to install the launch trail product. All DPW personnel are skilled professionals. Manufacturer instructions will be followed closely to install the pavers. It is anticipated that no additional training is required, however, if it is determined that assistance is needed, the manufacturer will be contacted to provide training to DPW staff.

A9 – Documents and Records

Abbreviated QAPP

The Project Manager and the Project QA/QC Manager are responsible for ensuring that project personnel have the most current version of the Abbreviated QAPP, including applicable field data forms, the R5 Users Manual, and standard operating procedures. The Abbreviated QAPP will remain on file (both hard copy and electronic) with the Project Manager and with the DES Program QA Coordination for a minimum of five years.

Field Data Sheet – Gully Stabilization

DES personnel and project volunteers will be supplied with the *R5 Load Estimation Model Field Data Entry Sheet – Gully Stabilization* prior to visiting the site for pre-construction and post-construction data gathering. A field data sheet is filled out during each site visit and submitted to DES. Once all fieldwork is completed, the DES Project Manager will inspect and sign off on each individual field data sheet. Once signed off, the information on the field data sheets will be transferred to computer files by the DES Project Manager or other DES field staff. All field data sheets will be scanned and kept on file with the DES Project Manager to ensure that the data are always available in two forms. Copies of the field data will be given to Michele Tremblay (Project Manager) for use in their semi-annual and final reports to DES.

Quarterly & Final Reports

The Project Manager will submit quarterly progress reports to DES using the DES Quarterly Project Report Form. At the completion of the project, the Project Manager will submit a final report according to the *319 Grants Program Final Report Guidance*. DES staff will keep a complete set of project files archived at the program's office for a minimum of five years.

B1 – Project Design (Experimental Design)

The existing river access area located at Jamie Welch Park in Boscawen, NH is a car-top canoe and kayak launch that experiences a high volume of recreational boating enthusiasts during the summer and fall. The existing parking area and foot path down to the river are composed entirely of coarse to loamy sands that are occasionally flooded during extreme flow events on the Merrimack River. The heavy traffic load down the sloping path to the river has allowed foot shear erosion to occur, along with subsequent sediment transport and deposition into the river. The Town of Boscawen is interested in keeping this public, river access site as undeveloped as possible, and at the same time, ensuring that erosion and sediment loss are stabilized. Several different scenarios were discussed and evaluated during the BMP selection process. The final decision to install a porous paver pathway to the river from the parking area was derived based upon the need for stormwater infiltration, slope stabilization, pollutant attenuation, and the adaptability of this particular BMP to fit within the footprint of the existing path.

B2 – Model/Equation Methods

The load reduction model used for this project is the Region 5 Load Estimation Model, developed by the State of Michigan Department of Environmental Protection and Illinois EPA. The original version of the model was created in 1999 to calculate and document pollutant load reductions for watershed projects treating sediment and nutrients. The Model was revised in 2002 to include a new worksheet containing state and county names, precipitation data, correction factors, and the USLE parameter values summarized from the 1997 National Resources Inventory database. In response the Gully and Bank Stabilization worksheets were modified to allow users the option to input site specific data instead of using default values. The user manual was revised in 2002 EPA to correspond to changes made to the model.

The Model is recommended by EPA and by DES for use on Section 319 grant projects. The model is appropriate for this project because it estimates loading of the primary and secondary pollutants of concern, sediment and associated nutrients. In addition, this is a relatively small-scale and small-budget project. It would be inappropriate and unnecessary to use a more input-intensive model. It was determined that the Region 5 Model will adequately assess the load reductions in a method appropriate for the scale of the project and in sync with the skills level of the project managing organization. In

addition, the Region 5 Model is used for similar projects in NH, which will make for comparable model analysis. No modifications will be made to the model for this project.

If problems occur with the model, DES staff will be contacted. If DES staff are unable to correct the problem, EPA and Tetra Tech, Inc., the contractor assigned to the Spreadsheet Tool for Estimating Pollutant Loads (STEPL) and Region 5 Models, will be contacted for assistance in correcting the problem.

B3 – Quality Control

Field Data Collection

The data collected for input into the model will be done in accordance with the Field Data Entry Sheet (Appendix B) provided with the model. The data sheet will be checked for completion prior to leaving the site.

Modeling

The Region 5 Load Estimation Model for Gully Stabilization will be used for this project. When running the model a second person will verify the input values to prevent transcription errors. In addition, a duplicate run, conducted by a second modeler, will be done each time the model is used. This will further reduce transcription errors and ensure proper estimates.

BMP Implementation

This is a stabilization project. The BMP being installed is a porous paver system to infiltrate runoff and filter out sediments and associated nutrients before entering the Merrimack River. BMP inspections will include monthly visual inspections by the Boscawen DPW to ensure that the pavers have not been disturbed and are functioning as designed. This includes no visible alteration to the trail and pavers as installed, no sediment deposition into the river and no visible signs of erosion or transport of sediment along the pavers. If the visible inspection shows that the pavers are not performing as designed, the project manager will be contacted and the manufacturer may be consulted.

B4 – Inspection/Acceptance of Equipment and Materials

The only materials to be purchased for the project are the porous pavers. The pavers will be inspected by the project manager to make sure they are in working order and the full order has been fulfilled. Any problems with the pavers will be recorded by the project manager and the manufacturer will be contacted. All other materials will be existing materials from the DPW. DPW staff will inspect all materials and equipment prior to use and will be responsible for repair or replacement if necessary.

The Region 5 Loading Estimation Model is available to the public for download from the EPA website. Any problems with the model will be reported to EPA and Tetra Tech, Inc., the contractor assigned to the STEPL and Region 5 Models.

B5 – Non-Direct Measurements

Historical data will be obtained from the town to determine the number of years that the launch trail has been there. This information will be used to run the model. Regional soil maps will be used to determine the soil types present at the site and the NH Geological Survey will provide information on soil weights and soil N & P concentrations. Other data, such as BMP removal efficiency may be obtained by

the manufacturer, if available, otherwise the default BMP removal efficiency value from the User Guide will be used. All other model inputs will use default values provided in the Region 5 Model User Guide (Appendix A).

All data is considered to be of acceptable quality because of their sources. The Town of Boscawen, The NH Geological Survey, Michigan DEP, and EPA are trusted data sources sufficient to meet the needs of this project. Any limitations to the data that are determined will be noted.

B6 – Data Management

All field data sheets and field notebooks are kept on file within the NHDES Watershed Assistance Section offices located at 29 Hazen Drive in Concord, New Hampshire. Watershed Assistance Section staff computers are used to upload the model and store calculation results. All electronic information is stored on the NHDES server and data is backed up on a daily basis. Hard copy and electronic versions of the data will be provided to the Town of Boscawen for their records. Refer to Section B3 for a description of the quality control checks.

C1 – Assessments and Response Actions

The User Manual (Appendix A) will be followed to ensure proper load reduction estimates. The Field Data Entry sheet for Gully Stabilization will be filled out in its entirety to ensure that all necessary input data is obtained prior to running the Model. As described in Section B3, a second person will verify the data input values in the Model to check for transcription errors and a second person will run the Model duplicate to ensure proper estimates.

The project will be completed as designed and the pavers will be installed according to the manufacturer's instructions. Proper field measurements will be taken to ensure that the modeled project scenario accurately reflects the BMP installed.

The project manager and DES project manager will be responsible for oversight and will work cooperatively to manage corrective actions, if necessary.

C2 – Reports to Management

Quarterly progress reports and a final report are filed by the Project Manager. Quarterly progress reports are due at the end of June, September, December, and March. The final report follows guidelines provided by the DES Program Manager and these reports typically include project successes and failure, final budgets, evaluation and pollutant load reductions. The Project QA Officer annually submits a Nonpoint Source Projects – Pollutant Control Report to the Project Manager, who reviews it and submits it to DES.

D1 – Data Evaluation of Load Reduction Estimates

The Project Manager and the DES Project Manager will work together with the Region 5 Load Estimation Model for Gully Stabilization to generate pre-implementation loading estimates. These results will then be compared to the post implementation measurements to determine the load reductions achieved at the project site. The DES Project Manager will perform initial review of pre and post implementation data to discern any trends, and to convert findings into narrative that will appear in the final report. The DES Project Manager will submit the raw data along with observations and narrative to

the Project Manager for review and verification. Any anomalies in the information will be reported to the DES Project Manager for consideration and a course of corrective action will be developed between the Project Manager and the DES Project Manager.

D2 – Evaluation and Project Success

The intent of this project is to resurface and define the launch trail with porous pavers to discourage widening of the path and limit unnecessary erosion and destruction of vegetation due to foot traffic, as well as prevent the trail from washouts during intense storm events. One measure of project success will be photographic documentation and analyses of pre and post site conditions according to DES Photo Documentation Standard Operating Procedures. Documentation of this measure will consist of comparisons between pre and post implementation photos that will be compiled and presented as an appendix to the final report submitted to DES from the Town of Boscawen. Other documentation will consist of data comparisons between pre and post pollutant load estimates generated from the Region 5 Load Estimation Model. This information will be compiled by the Project Manager and presented within the body of the final report. As-built plans will be included with the final report and compared to the original construction plans for the project to document any deviations from the original project plan. Any changes in the final design will be explained, and justified in the final report so that improvements in future plans can be made.

References

Michigan Department of Environmental Quality Surface Water Quality Division Nonpoint Source Unit. *Pollutants Controlled Calculation and Documentation for Section 319 Watersheds Training Manual.* June 1999. (revised 2002).